

Enhanced T-gate Structure for Modulation Doped Field Effect Transistors

ABSTRACT OF THE INVENTION

5 A structure and a method are disclosed of an enhanced T-gate for modulation doped field effect transistors (MODFETs). The enhanced T-gate has insulator spacer layers sandwiching the neck portion of the T-gate. The spacer layers are thinner than the T-bar portion overhang. The insulating layer provides mechanical support and protects the vulnerable neck portion of the T-gate from chemical attack during subsequent device processing, making the T-gate structure highly scalable and improving yield. The use of thin conformal low dielectric constant insulating layers ensures a low parasitic gate capacitance, and reduces the risk of shorting gate and source metallurgy when source-to-gate spacings are reduced to smaller dimensions.